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(56) Documents cited

GB 1389327

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EP A2 0080363

(58) Field of search

G2X

G2C

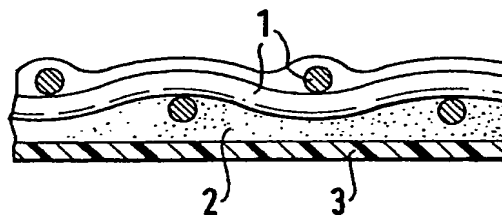
B6C

Selected US specifications from IPC sub-classes G03C
G03F

(54) Screen-printing stencil

(57) Textile or metallic fabric 1 in reel or sheet form, e.g. steel or mesh number 200-500 woven from thread of 5-50 my thickness is provided with a photosensitive coating 2 with a flat surface optionally covered by a flat protective backing 3. The flat surface is novel and improves high-resolution screen-printing.

FIG. 2



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FIG. 1

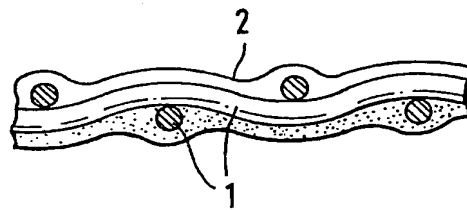
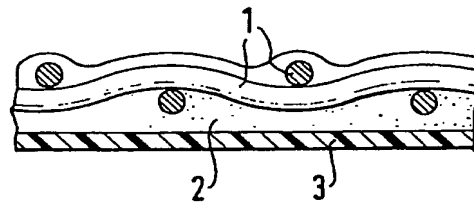


FIG. 2



SPECIFICATION

Screen-printing stencil

- 5 This invention concerns a textile or metallic fabric in sheet or reel form with a photosensitive layer on one face thereof, which fabric is suitable for the manufacture of flat or cylindrical screen-printing stencils.
- 10 It is known to provide textile or metallic fabrics for screen-printing stencils with a photosensitive layer, to expose the fabric after drying to the printers' copy, and to develop and to wash out the non-exposed layer so
- 15 that printing is possible only through the open meshes of the fabric. This coating however has the disadvantage that the photosensitive emulsion or solution sinks into the meshes of the fabric and thereby causes a rippled surface and an uneven thick layer. With such disadvantages the fabric is not suitable for the manufacture of screen-printing stencils for high-resolution printing.
- 20 It has been proposed by Kyle (der Siebdruck, 8/84) to use as a photosensitive emulsion a thixotropic emulsion in order to provide a flat surface for the photosensitive coating. It has been found however that an absolutely flat surface can only be achieved with a very
- 30 thixotropic emulsion. The use of such an emulsion gives insufficient de-aeration of the fabric; generating bubbles which result in an irregular photosensitive coating unsuitable for screen-printing stencils for high-resolution printing.
- 35 It has further been proposed in US-PS 3.759.799 to manufacture cylindrical screen-printing stencils from metallic fabric by providing the fabric on one side with a flat nickel coating by electrolytic nickel plating and thereafter providing a photosensitive flat coating. After exposure, developing and washing out of the copy it is necessary to etch the nickel-plating at the open parts in order to open the fabric and the meshes again. This however
- 45 has the disadvantage that during the very difficult etching step the nickel is removed from the cross points of warp and weft, reinforced by the prior nickel plating, and that the negative copy is undercut. The reinforcement of the metallic fabric necessary for the manufacture of cylindrical screen-printing stencils is thus weakened and the stencil is damaged. Apart from this, such a method of manufacturing screen-printing stencils is difficult and costly and cannot be done by a printer on a routine basis.
- 50 The present invention sets out to provide a printer with a textile or metallic fabric with a photosensitive coating having a flat surface, which the printer can expose and develop, and manufacture therefrom flat or cylindrical screen-printing stencils.
- 55 In one aspect the invention provides a textile or metallic fabric in reel or sheet form

provided with a photosensitive coating, characterised in that the photosensitive coating has a flat surface.

- 70 A removable protective backing may be provided over the flat surface. The fabric preferably consists of steel threads, woven for example in linen weave, and typically having a mesh number of 250 to 500 and a thread thickness of 5 to 50 my. Optionally, the steel
- 75 thread fabric may be provided with a nickel plating of 2 to 20 my thickness.

Also according to the invention the textile or metallic fabric in sheet or reel form may be provided with a photosensitive coating by a method involving forming a layer of photosensitive emulsion or solution on a flat or cylindrical heated surface and adhering the fabric to the layer of photosensitive emulsion or solution while it dries. Optionally further coating of the textile or metallic fabric is provided. The process is carried out so that the threads do not disturb the flat surface of the coating. Such textile or metallic fabrics in sheet or reel form with a photosensitive coating with flat surface may be manufactured for example according to the method and with the apparatus described in German Application P 34 41593.9.

- 80 It is advantageous to provide the flat surface of the photosensitive coating with a protective foil. The foil can constitute a back sheet for the generation of the photosensitive coating on flat or cylindrical heated surface or can be applied to the flat surface of the finished fabric.

100 The invention will be further described with reference to the non-limiting example shown in the accompanying drawings, in which:—

- 105 *Figure 1* shows a section through a textile or metallic fabric with a coating of a photosensitive material in accordance with the prior art, and

110 *Figure 2* shows a section through a textile or metallic fabric provided with a coating according to the invention.

Fig. 1 shows how the photosensitive coating 2 in the prior art sank into the meshes of the fabric 1 so that no flat surface of the coating could be achieved. This is a known disadvantage in the photochemical method of transferring a print to a screen-printing stencil.

Fig. 2 however shows a fabric 1 with the photosensitive layer 2 and a protecting back sheet 3. The face of the coating is absolutely flat and an excellent transfer of the print is achieved. The protecting sheet 3 has of course to be removed from the coating before exposure.

CLAIMS

- 125 1. A textile or metallic fabric in reel or sheet form provided with a photosensitive coating, characterised in that the photosensitive coating has a flat surface.
- 130 2. A fabric according to claim 1, character-

ised in that the flat photosensitive coating is provided with a removable protective backing over the flat surface.

3. A fabric according to claim 1 or 2 characterised in that the fabric consists of steel threads.

4. A fabric according to claim 3 characterised in that the steel thread fabric is woven in linen weave.

10 5. A fabric according to claim 4 characterised in that the steel thread fabric has a mesh number of 250 to 500 and a thread thickness of 5 to 50 my.

15 6. A fabric according to claim 3 characterised in that the steel thread fabric is provided with a nickel plating of 2 to 20 my thickness.

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